

## AM1 Alcohol Analyser ( from ANALOX ltd )



The AM1 alcohol methodology is becoming a popular alternative to the standard methods used in laboratories performing research studies into alcoholism.

Historically, two techniques have been used to measure alcohol in research applications: spectroscopy and chromatography. The spectrophotometric method is relatively time consuming, taking up to 15 minutes to perform. Precipitation is required for the deproteinisation of whole blood samples and a multi-point calibration curve is constructed. The gas chromatography method requires relatively expensive hardware and an experienced operator. Again results are obtained in minutes rather than seconds.

The Analox AM1 addresses these points whilst providing accurate, reproducible results that correlate well with the two reference methods.

### Main Benefits of the AM1:

**Speed** - With a measurement time of less than 20 seconds plus a printout directly in concentration units, the Analox method is the fastest commercially available. This makes it the method of choice where the blood alcohol concentration is required during the course of an experiment.

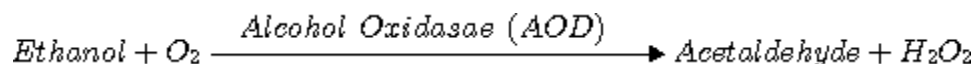
**Small Sample** - Plasma samples as small as 2.5  $\mu$ l can be measured on the AM1. This is ideal for experiments where the quantity of whole blood available is limited.

**Direct Sample Pipetting** - After collection of a whole blood sample into a heparinised capillary tube and high speed (1 minute) centrifugation, the Analox pipette can inject plasma directly into the AM1 analyser. The protein precipitation step associated with the spectrophotometric method is thus eliminated.

**Cost** - With only a single calibration point, the combined cost of operator time and reagents is lower than the reference methods. The wide dynamic range, up to 400mg/dl without dilution, results in further reductions in time and cost.

## Analytical Principle:

With alcohol oxidase enzyme, the analyser measures the rate of oxygen uptake and, under appropriate controlled conditions, this is directly proportional to the alcohol concentration. Thus, for Ethanol in plasma:



## Operation:

The single action of injecting a sample is all you need to obtain a result and prepare the analyser for the next analysis. Sample injection via a very accurate positive displacement pipette also triggers the complete analytical cycle. A hard-copy result is then obtained on the integral printer within 20 seconds of sample introduction. The analyser is first calibrated with a known alcohol standard.

Samples can be plasma, serum or neutralised PCA treated whole blood. Analyses are menu-driven via the 32-character display which guides the operator through the complete procedure. Subsidiary menus are reached via YES and NO buttons which enable the user to change calibration values, optimise operational modes, utilise special functions and perform statistical data analysis. The display also provides self-test diagnostics in relation to sensor electrode status and fluid movements.

<b>Analytical Performance</b>	
<b>Linearity</b>	0-200mg/dl (43mmol/L) using 5µl sample, 0-400mg/dl (86mmol/L) using 2.5µl sample
<b>Accuracy (Recovery)</b>	Serum: $y (\text{Analox}) = 0.973 (\text{true value}) + 2.1 \text{mg/dl}$ ; $r = 0.9929$ , $n = 89$
<b>Accuracy (Method Comparison)</b>	Whole blood vs Gas Chromatography (GC) $y (\text{Analox}) = 1.04 (\text{GC}) + 1.3 \text{mg/dl}$ ; $r = 0.9905$ , $n = 27$
<b>Precision</b>	Plasma, CV = 1-2% at 100mg/dl, Whole blood, CV = 2-3% at 85mg/dl
<b>Sensitivity (analyser)</b>	0.1mg/dl, 0.01%mmol/L, 0.001% (selectable)

## Instrument Specifications:

<b>Method</b>	Enzymatic oxygen-rate
<b>Sensor</b>	Clark-type amperometric oxygen electrode
<b>Reaction Temperature</b>	30°C
<b>Display</b>	32 character backlit LCD
<b>Printer</b>	16 column dot matrix, 1 line/sec.
<b>Statistics</b>	Sequential, giving mean, S.D and C.V.
<b>Interface</b>	Serial data port, optional Windows software available
<b>Power</b>	100-250VAC, 50-60Hz, 12-15VDC, 60VA
<b>Dimensions</b>	23cm(width) x 29cm(depth) x 15cm(height)
<b>Weight</b>	3.8Kg (Portable, 6Kg)

## Ordering Information:

<b>AM1</b>	Alcohol analyser, mains version
<b>P-AM1</b>	Portable Alcohol analyser, rechargeable battery/mains
<b>GMRD-113</b>	Alcohol reagent kit, 50ml (70 analyser cycles)
<b>GMRD-113J</b>	Alcohol reagent kit, 8 x 50ml (8 x 70 analyser cycles)
<b>GMRD-113CJ</b>	Alcohol reagent kit, 4 x 175ml (4 x 250 analyser cycles)
<b>GMRD-110(050)</b>	Ethanol standard, 50mg/dl, 4 x 1ml
<b>GMRD-110(100)</b>	Ethanol standard, 100mg/dl, 4 x 1ml
<b>GMRD-110(150)</b>	Ethanol standard, 150mg/dl, 4 x 1ml
<b>GMRD-110(200)</b>	Ethanol standard, 200mg/dl, 4 x 1ml
<b>GMRD-110(300)</b>	Ethanol standard, 300mg/dl, 4 x 1ml
<b>GMRD-110D</b>	Alcohol quality control, 0.5ml
<b>GMRD-110D4</b>	Alcohol quality control, 4 x 0.5ml
<b>GMRD-023</b>	Heparinised capillaries for plasma alcohol, pack of 500
<b>GMRD-024</b>	Heparinised capillaries for plasma alcohol, pack of 1000

Specialised Blood collection systems and accessories are available